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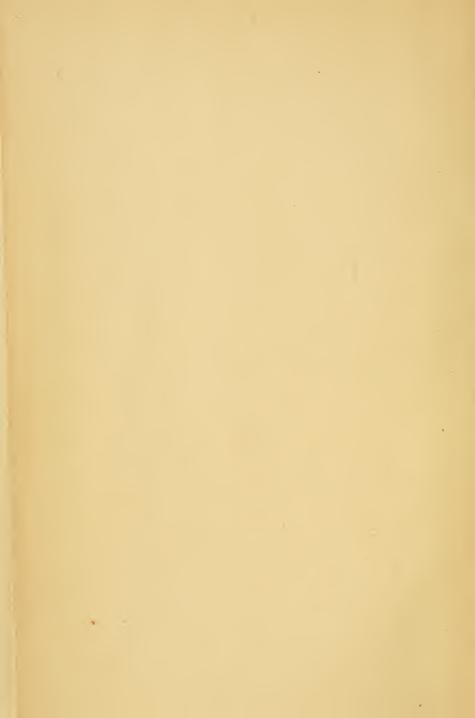
Roland Hoyward Wood.

Substituted for S. a. Hagan Copy.

# ERRATA.

Page 2 hords should read hordes.

- 2. sub istance should read subsis-
  - 4. polygottus should read polyglot
  - 5. Helmitherus should read Helmin-
  - Cicindelæ should read Cicindelidæ.



# QUARTERLY JOURNAL

OF THE

# Boston Zoölogical Society.

Vol. III. — JANUARY, 1884. — No. 1.

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BOSTON, MASS.
PUBLISHED BY THE SOCIETY.

Entered at the Boston P. O. as second-class mail matter.

#### THE QUARTERLY JOURNAL

OF THE

# BOSTON ZOÖLOGICAL SOCIETY,

A MAGAZINE DEVOTED TO THE STUDY OF AMERICAN ZOÖLOGY, ESPECIALLY THE VERTEBRATA AND INSECTA.

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And should be sent by Registered Letter or P. O. Order on Boston; otherwise at the risk of the sender.

Communications intended for publication should be received at least one month before the publication of the number in which they are intended to appear.

The editorial supervision is in charge of

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to whom all articles should be sent.

Advertising Rates.—\$5.00 per page; \$3.00 per half-page; \$2.00 per quarter-page. Special rates for more than one insertion.

There will be begun in the next number a department of Recent Literature which shall contain analyses of the contents of the more important publications relating to American Zoology.

#### THE

# QUARTERLY JOURNAL

OF THE

## BOSTON ZOÖLOGICAL SOCIETY.

Vol. III.

January, 1884.

No. I.

NOTES ON THE HABITS OF HYDROCHARIS OBTUSATUS SAY AND MAGDALIS OLYRA HERBST.

## By F. C. Bowditch.

Hydrocharis obtusatus Say. On April 19, 1877, four imagos were put in an aquarium, and one pair almost immediately copulated; a few days later I noticed the female in a corner, apparently ovipositing, a long filament of what I now take to be silk, or something of that nature, protruding from her abdomen; a few days after, about April 23, a curious triangular shaped object, about the size of a large beech-nut and covered with an old leaf appeared floating on the surface of the water. One of the sides was uppermost and from the edge of the side of the base protruded a curved and apparently hollow tube about one-quarter of an inch long, and extending backwards and upwards; its purpose is not evident but it would seem as if it might have something to do with ventilation or respiration. A day or two later another egg case appeared.

On May 1, one of the cases either came open, or was torn open in some way at the side, and under water. The eggs, about a dozen in number, were attached by their ends to that side of the case which rested on the surface of the water, and were swelled and transparent at the lower extremity; some appeared to have a dark streak down the middle as if about to hatch.

The interior of the case appeared to be filled with eggs glued or fastened together with silk, the whole forming a compact spongy mass of a whitish-yellow color.

The second case is more flattened and square; on the front it had a curious roundish disk-shaped spot or surface, which appears to be for the purpose of adhering by suction, to any substance it may come in contact with, so as to in some degree prevent the case from floating away.

May 4. The eggs described above appear to have hatched, the larvæ, however, still remaining in the egg case; they are about 2-10 of an inch long, have two blackish, dorsal stripes from the head to the tail, growing fainter towards the former on which are two reddish dots (eyes?); the front half of the body is brownish, with occasional hairs or minute black streaks; the head and feet are both tipped with minute black spots, and the general appearance is blackish-brown gradually fading away to the usual transparent white tail. There are more than I at first supposed, but how many it is at present hard to tell, without danger of hurting them.

May 7. The last emerged yesterday, and unless some have been eaten there were not more than eight or ten. The larva at this time is about 7-10 of an inch long; two dorsal stripes run from the segment behind the head to the tail; the head is large and flattened, eyes prominent, jaws and mouth parts strongly developed, the maxillae reaching

for some distance beyond the mandibles and filamentary appendages, or a fringe of that nature, which protrude from the sides of the body, though apparently arranged without any system as regards the segments.

They seem to prefer to keep near the top where they clutch a piece of grass, and elevate their tails so as to be just at the surface, apparently breathing through them.

May 8. The fringe above spoken of (which was very indistinct when the larvæ were first hatched) has assumed the character of separate arm-like projections which doubtless form a part of its subaquatic breathing apparatus. I found something which they like to eat, viz: the larvae of a small species of fly (Chironomus), which is found on grass and stones, in brooks etc. On placing one of them before a grub he immediately shot forward, and seizing it in his jaws devoured it with the greatest voracity. Their appetite is something alarming, and it is difficult to find food enough to satisfy them. They appear to confine themselves almost wholly to the surface, and dislike to go more than an inch below. I have only noticed one instance where one has gone to the bottom of the aquarium. The most of them prefer to eat below the surface, but one invariably rears the front of his body and head out of water, and eats in that position.

They are very bold and do not hesitate to attack an insect larger than themselves. They will not eat butcher's meat, or crickets, or flies or things of that kind. When not eating they remain with the tail upraised, the body slightly bent, and the jaws extended, ready to grasp anything which comes along.

On May 12, I witnessed a combat between a leech and one of the larvæ the latter seized the leech by the posterior end, and attempted to eat him, the leech curled over and after some effort managed to seize the larva in about

the middle of the body, the larva then after some struggle let go, the leech at the same time loosening his hold; the larva was apparently unhurt as he swam off in a lively manner, while the tail of the leech was completely divided by the jaws of his opponent; they were about of even size, the leech's length being difficult to judge on account of his contractile habits; if the larva had been a little stronger I have no doubt he would have come off conqueror. The small dragon-fly grubs flee from them in the greatest dismay.

May 13, the second egg case hatched to-day about fourteen or fifteen larvæ. I put in some mosquito pupæ in hopes they would prove a great acquisition in shape of food, but they were so very lively that they were caught very seldom together, and even when caught, they struggled so furiously as to get away in almost every instance. They seem, moreover, to be too tough, as I noticed the largest larva spit out one which he had been trying to eat, and only when very hungry would they touch them at all.

In the afternoon a third egg of the same appearance as the others, was observed on the surface, though this was a trifle smaller than the former ones. The larve have all adopted the practice of eating with their head, and front part of the body out of the water; the only reason I can imagine is, that the things they feed on are very juicy, and if they eat them under water the juices would in great measure be lost, whereas, by lifting the prey out of water, the juice simply collects on the body itself and is easily sucked up; for that reason I believe they never try to eat anything but what they can lift wholly out of the water.

On May 15, I caught the last large dragon-fly grubs, which appear to have disposed of several of my young larvæ.

On May 16, I lost some larve by cleaning my aquarium. They do not seem to have grown much.

May 18. The last three days have been very warm and the larvæ have taken a fine start. They are so large as not to be particular what they eat, but chew up everything in a most miscellaneous way. I can only find about six out of the whole lot, and I suspect it is a case of the survival of the fittest, for whenever by chance they happen to meet a conflict almost always ensues; they have given up staying on top of the water, as they did at first, and pass a good deal of time on the bottom in semi-concealment, in the thick weeds, or behind a stone.

The third egg case which appeared six or seven days ago, began to sink about the 15th, and by the 16th it was on the bottom, and for no apparent reason. To-day however, it suddenly appeared again on the surface, and on examination proves to have had an addition put to it of almost the same size as itself. This raising of an old egg case seems to show, that the beetles knew that the eggs must be on the surface in order to hatch properly, and therefore take the only means in their power to get it back there, i. e. by adding to it so as to make it again sufficiently buoyant to float. It would be interesting to test the truth of this theory by sinking an egg case, and seeing if it would hatch.

For some unexplained cause or other my larvæ all died, so that I was unable to observe them further, and circumstances have not been favorable since then for a renewal of my aquarium. It will easily be seen that my notes on eating out of the water need further investigation, and possibly the presence of Neuropterous larvae may have had something to do with their disinclination to go beneath the surface, though it is perfectly normal to find both species together. It may be that they only stay near and eat on the surface, till they attain a certain growth.

The larva undergoes its transformation in the ground, in the vicinity of the water, where it was hatched but I have never seen its cocoon.

I should judge from this experiment that the eggs took about ten days to hatch, and the larvæ about thirty days to attain full size. I infer that the whole summer is passed in the ground as pupa, the beetles probably emerging in early spring. This early and quick arrival at maturity enables them to breed in many temporary ponds which are dry in summer though full in April and May.

Grassy, leafy, shady spots are best for this species, the egg cases are often found floating on the surface early in May.

Magdalis olyra *Herbst*. This is one of the true bark eating Curculios and lives on the inner or sap bark only. In early summer the beetles may be found walking on the leaves of the hickory tree, or in the cracks and crevices on the bark, boring holes with their snouts in which to deposit their eggs.

After the eggs are laid, and before the tree shows any outward signs of failing, an experienced eye will detect their presence, by a small, round spot of whitish borings, which is left by the beetles when they make their ovipositing hole.

The eggs hatch and reach maturity by the close of the summer. The larva is small, not over a quarter of an inch long, yellowish white in color and slightly chunky towards the head which is darker than the body. They tunnel the bark in every direction leaving only just enough tissue to prevent the bark warping away from the tree.

When fully grown, that is, in autumn, the larva excavates for itself a small, smooth, and pod-shaped hole in the bark, in which it undergoes its changes, emerging from the tree in spring.

As far as my observations extend the species appears to prefer small trees, from four to six inches in diameter.

In former years I have counted as many as four or five trees infested and killed by this pest in one small piece of woodland. If the tree is small and very badly infested, it dies very quickly; and shortly after the beetles have escaped the bark is apt to flake off, or curl up, in quite large pieces. A few years ago the beetles did considerable damage to small hickories in my vicinity, but for the last two or three years, I have seen but few beetles, and no badly infested trees. I have noticed only one parasite of this insert, viz: a small black and red ichneumon wasp, they occurred only in scattered instances and were comparatively uncommon.

When a piece of bark filled with Olyra in various stages, is peeled from a tree, the parasites may be detected at a glance by their silken cocoons, firmly imbedded in the burrow of some hapless larva. Barking the infested trees in early spring and burning the bark, I would suggest as a means of defence.

Packard in his Insects Injurious to Forest and Shade Trees (Bulletin No. 7), page 28, speaks of this species as found on the oak, but I have never seen it anywhere, but on various species of *Caryæ*.

#### ORNITHOLOGICAL NOTES FROM MINNESOTA.

By Foster H. Brackett.

(Continued from Vol. II. p. 49.)

10. Parus atricapillus. Chickadee. Common. Found almost everywhere.

11. Sitta carolinensis. White-bellied Nuthatch. Heard a single specimen.

12. Troglodytes Aëdon. House Wren. Very common in the woods, especially in the neighborhood of fallen trees.

13. CISTOTHORUS STELLARIS. Short-billed Marsh Wren. Shot a single specimen on the edge of a slough.

- 14. MNIOTILTA VARIA. Black and White Creeper. Very common. One of the earliest birds and found in company with the Golden-crowned Thrushes (Siurus auricapillus) some days before most of the other warblers arrived.
- 15. Helminthophaga chrysoptera. Golden-winged Warbler. Shot a single specimen from a large flock of warblers.
- 16. Helminthophaga Ruficapilla. Nashville Warbler. Common in swampy localities.
- 17. Helminthophaga celata. Orange-crowned Warbler. Shot one specimen in a clump of small trees on the bank of a stream.
- 18. Helminthophaga peregrina. Tennessee Warbler. Found in company with the preceding and in about the same numbers.
- 19. Dendreca Æstiva. Yellow Warbler. This species was without doubt the most common bird in that section of the country during my stay there. Found everywhere.
- 20. Dendræca coronata. Yellow-rumped Warbler. Very abundant.
- 21. Dendræca Maculosa. Black and Yellow Warbler. Common.
- 22. Dendræca pennsýlvanica. Chestnut-sided Warbler. Very common.

- 23. Dendræca striata. Black-poll Warbler. One of the most common warblers and one of the earliest of the small birds. Numbers were seen on the prairies, several miles from the woods, running along the log fences.
- 24. Dendræca virens. Black-throated Green Warbler. Common.
- 25. Dendræca pinus. Pine-creeping Warbler. Saw one or two specimens.
- 26. Dendræca Palmarum. Red-poll Warbler. Very common
- 27. Dendræca Palmarum hypochrysea. Yellow Redpoll Warbler. Common. Found in company with the preceding and with the Black-poll (*D. striata*) and Yellow-rumped Warblers (*D. coronata*).
- 28. Siurus auricapillus. Golden-crowned Thrush. Very abundant. One of the first birds to arrive and for a day or two greatly outnumbering the other small birds.
- 29. Siurus nævius. Small-billed Water Thrush. Very common along the banks of the lakes and creeks.
- 30. Geothlypis trichas. Maryland Yellow-throat. Common in the thick bushes in the neighborhood of swampy localities.
- 31. Myiodioctes pusillus. Black-capped Yellow Warbler. Very abundant especially around sloughs and low bushes along the edges of streams.
- 32. Setophaga ruticilla. American Redstart. Very abundant.

[The above notes on the warblers are very incomplete as most of the species were migrating and for several days when they were the most abundant I was unable to search for them. For three or four days there were hundreds of Warblers on the way north and no doubt with careful seaching many more species could have been found.]

- 33. VIREOSYLVIA OLIVACEA. Red-eyed Vireo. Very abundant.
  - 34. VIREOSYLVIA GILVA. Warbling Vireo. Common.
- 35. Lanivireo flavifrons. Yellow-throated Vireo. Quite common.
- 36. Lanivireo solitarius. Blue-headed Vireo. Common.
- 37. Ampelis cedrorum. Cedar bird. Saw one or two small flocks.
- 38. Progne subis. Purple Martin. Common around the towns.
- 39. Petrochelidon lunifrons. Cliff Swallow. Common.
- 40. Hirundo erythrogastra. Barn Swallow. Common.
- 41. Tachycineta bicolor. White-bellied Swallow. Very abundant. Breeds in hollow stumps.
  - 42. Cotyle riparia. Bank swallow. Saw several pairs.
  - 43. Pyranga rubra. Scarlet Tanager. Saw two males.
- 44. Carpodacus purpureus. Purple Finch. Common.
- 45. Astragalinus tristis. American Goldfinch. Very common.
- 46. Chrysomitris pinus. Pine Goldfinch. Saw a flock of about one hundred in a wheat field the last of May and shot half a dozen.
- 47. PLECTROPHANES NIVALIS. Snow Bunting. A small flock of half a dozen birds in summer plumage lighted for a moment on an old straw stack during the last week of May but flew away before a specimen could be secured.
- 48. Passerculus sandwichensis savana. Savannah Sparrow. Common on the prairies.
- 49. Poecetes gramineus. Grass Finch. Very common on the prairies.

- 50. Chondestes Grammica. Lark Finch. Very common in stumpy fields where their beautiful song is heard at all hours of the day.
- 51. Zonotrichia querula. Harris's Sparrow. Saw half a dozen specimens in all. Found in low bushes in company with the White-throated Sparrow (Zonotrichia albicollis).
- 52. Zonotrichia albicollis. White-throated Sparrow. Very abundant.
  - 53. Spizella montana. Tree Sparrow. Common.
- 54. Spizella domestica. Chipping Sparrow. Not very common.
- 55. Spizella Pallida. Clay-colored Sparrow. Common. Frequents the neighborhood of cultivated land.
- 56. Junco hyemalis. Black Snowbird. Very abundant.
- 57. Junco oregonus. Oregon Snowbird. Saw about half a dozen individuals in company with the preceding. The last one was seen May 10.
- 58. Melospiza fasciata. Song Sparrow. Very abundant.
- 59. Melospiza palustris. Swamp Sparrow. Saw one or two specimens.
- 60. Pipilo erythrophthalmus. Chewink; Towhee. Common in thick bushy localities.
- 61. Zamelodia Ludoviciana. Rose-breasted Grosbeak. Very common.
- 62. Dolichonyx oryzivorous. Bobolink. Common in cultivated meadows.
  - 63. Molothrus ater. Cowbird. Very common.
- 64. Xanthocephalus icterocephalus. Yellow-headed Blackbird. Saw a few. Very common a little later in the year.

- 65. Agelæus phæniceus. Red and buff-shouldered Blackbird. Extremely abundant about the sloughs and marshy edges of ponds and streams.
- 66. STURNELLA MAGNA. Meadow Lark. Abundant on the prairies.
  - 67. Icterus spurius. Orchard Oriole. Quite common.
- 68. Icteurs galbula. Baltimore Oriole. Very abundant.
- 69. Scolecophagus ferrugineus. Rusty Blackbird. Common.
- 70. Quiscalus purpureus æneus. Bronzed Grackle. Common.
- 71. Corvus frugivorus. Common Crow. Very common.
  - 72. Cyanocitta cristata. Blue Jay. Very abundant.
- 73. Perisoreus canadensis. Canada Jay. Saw one flock of half a dozen individuals.
- 74. Eremophila alpestris. Shore Lark. Shot a single specimen on the prairie.
- 75. Tyrannus carolinensis. Kingbird. Extremely abundant.
- 76. Myiarchus crinitus. Great Crested Flycatcher. Saw four or five specimens.
- 77. Contorus Borealis. Olive-sided Flycatcher. Saw several.
  - 78. Contopus virens. Wood Pewee. Quite common.
- 79. Empidonax minimus. Least Flycatcher. Very abundant.
- 80. Trochilus colubris. Ruby-throated Hummingbird. Abundant and very tame frequently hovering within reach.
- 81. Chætura pelasgica. Chimney Swift. Very common.
- 82. Caprimulgus vociferus. Whip-poor-will. Heard one on May 6.

- 83. Chordeiles popetue henryi. Western Nighthawk. Extremely abundant.
  - 84. Picus villosus. Hairy Woodpecker. Common.
- 85. Picus pubescens. Downy Woodpecker. Very abundant.
- 86. Sphyrapicus varius. Yellow-bellied Woodpecker. The most abundant of all the woodpeckers. Found every where in the woods.
- 87. Melanerpes erythrocephalus. Red-headed Woodpecker. Common.
- 88. Colaptes auratus. Yellow-shafted Flicker. Not very common.
- 89. CERYLE ALCYON Belted Kingfisher. Common on all the streams and lakes.
- 90. Bubo virginianus. Great Horned Owl. Heard several hooting in the woods.
  - 91. ÆSALON COLUMBARIUS. Pigeon Hawk. Common.
- 92. Tinnunculus sparverius. Sparrow Hawk. Common. Breeding.
- 93. Pandion haliaetus carolinensis. Fish Hawk. Common.
- 94. Elanoides forficatus. Swallow-tailed Kite. Common. A female which I dissected on May 25 contained an egg the size of a Robin's and several others of a smaller size, and as the male was with her at the time she was shot, they would probably have bred in the vicinity.
- 95. Ictinia subcærulea. Mississippi Kite. Saw a single specimen flying across a lake. My brother Mr. C. G. Brackett has occasionally seen them there in previous years.
- 96. Accipiter cooperi. Coopers Hawk. Common. Found several nests, one of which contained five fresh eggs on May 21.
  - 97. Accipter fuscus. Sharp-shinned Hawk.

- 98. Buteo Borealis. Red-tailed Hawk. Common. Found a nest May 24, with two eggs just on the point of hatching.
- 99. Buteo pennsylvanicus. Broad-winged Hawk. Very numerous. The most abundant of all the Hawks. Found a nest on May 28, containing two fresh eggs.
- 100. Aquila chrysaëtus canadensis. Golden Eagle. Saw one.
- 101. Hallæatus leucocephalus. Bald Eagle. Saw half a dozen or more.
  - 102. Cathartes aura. Turkey Buzzard. Common.
  - 103. CATHARISTA ATRATA. Black Vulture. Common.
- 104. Ectopistes migratoria. Passenger Pigeon. Saw a few small flocks. Very abundant a little later.
  - 105. Bonasa umbellus. Ruffled Grouse. Common.
- 106. Cupidonia cupido. Prairie Hen. Common, except in the timber. Breeding.
- 107. Pedicecetes phasianellus columbianus. Common Sharp-tailed Grouse. Common.
- 108. Ardea herodias. Great Blue Heron. Saw six or seven.
- 109. Botaurus lentiginosus. American Bittern. Saw three or four.
- 110. Strepsilas interpres. Turnstone. Saw a bunch of four.
- 111. ÆGIALITES SEMIPALMATUS. Semipalmated Plover. Saw several flying over.
- 112. Gallinago media wilsoni. Wilson's Snipe. Flushed a single specimen from the edge of a small spring.
- 113. Batramia Longicauda. Batram's Sandpiper. Common on the prairies where it was breeding. Secured two females with eggs.
- 114. Tringoides Macularius. Spotted Sandpiper. Very abundant along the shores of the lakes and ponds.

- 115. Fulica americana. American Coot. Very common.
- 116. Bernicla canadensis. Canada goose. On May 6 saw a flock of eight flying north.
- 117. Anas Boscas. Mallard. Very abundant. Almost every slough and small pond was occupied by one or more pairs breeding.
- 118. AIX SPONSA. Wood Duck. Very common. Breeding.
- 119. Fulix collaris. Ring-necked Duck. Saw about half a dozen specimens. They were in pairs and as one of the females which I dissected contained a full-sized soft-shelled egg they would probably have bred in the vicinity.
- 120. ÆTHYIA VALLISNERIA. Canvas-back. Saw a pair in a small slough late in May.
- 121. ÆTHYIA AMERICANA. Redhead. Saw one pair flying over.
- 122. CLANGULA GLAUCION AMERICANA. American Golden-eye. Very common. On May 12, found a nest containing four eggs, in a hollow elm tree about an eighth of a mile from the nearest water.
- 123. Clangula albeola. Bufflehead. Saw one or two small bunches.
- 124. Mergus merganser americanus. American Sheldrake. Common. Breeding.
- 125. Mergus serrator. Red-breasted Merganser. Common.
- 126. Pelecanus erythrorhynchus. American White Pelican. Saw one flock of eight on a large lake where they are said to breed.
- 127. Phalacrocorax dilophus. Double-crested Cormorant. Very abundant in a swampy lake, where they roost on the dead trees.

- 128. Larus argentatus smithsonianus. American Herring Gull. Saw two specimens.
- 129. Larus delawarensis. Ring-billed Gull. Shot a single specimen.
- 130. Larus Philadelphiæ. Bonaparte's Gull. Saw two pairs.
- 131. Sterna forsteri. Forster's Tern. Very abundant.
- 132. Hydrochelidon lariformis sarinamensis. Black Tern. Common.
  - 133. Dytes auritas. Horned Grebe. Very common.
  - 134. Colymbus torquatus. Loon. Very abundant.

### ON THE SEXUAL CHARACTERS OF BOLETO-THERUS BIFURCUS.

### By R. Hayward.

Having recently been engaged in working over certain genera of *Tenebrionidæ* among which was *Boletotherus*, I submit for publication the following observations on the sexual characteristics of our only representative of the genus, *Boletotherus bifurcus*. A large series, comprising many specimens of both sexes was examined.

Besides the ordinary well-known sexual character of prothoracic horns in the male of this species, I have been able to find several others which, so far as known to me, have been hitherto undescribed. These are as follows: the frontal carina of the male differs from that of the female in being bifurcate. Upon close examination it will be found that the middle pair of coxe and the posterior tibiæ of the male are clothed with yellowish pubescence, the latter being only slightly pubescent on the under side. The third and fourth abdominal segments are also slightly pubescent, the pubescence occurring in patches on each side of the segments. These characters are, so far as known to me, as yet undescribed.

#### GENERAL NOTES.

Occurrence of the Pileated Woodpecker (Hylotomus pileatus) in Eastern Massachusetts. — On July 20, 1883, as my brother, Mr. Howard Brackett, was walking in a grove in Boston Highlands, a Pileated Woodpecker (Hylotomus pileatus) flew past him and lighted on a tree near by. Suddenly perceiving my brother, the Woodpecker took to flight and was soon lost to sight among the surrounding trees.

The occurrence of this bird so far south and especially at the season of the year at which it was seen is interesting and as it is so entirely different from any bird we are accustomed to see in this locality there can be no doubt as to its identity.—Foster H. Brackett, Boston, Mass.

Capture of the Black-backed three-toed Wood-pecker (*Picoides arcticus*) at West Medford, Mass.—On October 16, 1883, I shot a female specimen of the Black-backed three-toed Woodpecker (*Picoides arcticus*) at West Medford, Mass. The bird was perched on a dead pine tree in a tract of woodland and was the only specimen seen.—*F. W. Bridge, West Medford, Mass.* 





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Erratum

Tol. III. Mo.1, p.17, line 2, for tibrae, read Gemora:



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